

What is claimed is:

1. A device, comprising:

a data node;

5 a pass transistor coupled between the data node and a data pad; and

a driving circuit coupled to a control gate of the pass transistor, the driving circuit structured to drive the pass transistor responsive to a signal on the data pad.

2. The device of claim 1 wherein the driving circuit is coupled to the data pad

10 and is structured to receive the signal from the data pad.

3. The device of claim 2 wherein the signal is a voltage level signal.

4. The device of claim 1 wherein the pass transistor is structured to function

15 when the device is in an input state and to function when the device is in an output state.

5. The device of claim 1 wherein the driving circuit comprises:

a first voltage input to receive a first power supply voltage;

20 a second voltage input to receive a second power supply voltage, the second power supply voltage different than the first power supply voltage;

an input terminal structured to receive a voltage level signal from the data pad;

a voltage sensor coupled to the input terminal and structured to generate a control signal based on the voltage level of the data pad;

25 a control circuit coupled to the voltage sensor and structured to generate an output signal responsive to the control signal.

6. The device of claim 5 wherein the control circuit is coupled to the first voltage input and to the second voltage input, the control circuit structured to generate the output signal from exactly one of the first power supply voltage and the second power supply voltage, responsive to the control signal.

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7. The device of claim 6 wherein, when the pad voltage is above a threshold voltage, the control circuit generates the output signal from the lower of the first power supply voltage and the second power supply voltage.

8. A circuit comprising:
a data input terminal;
a pull-up circuit and a pull-down circuit coupled to the data input terminal;
5 a data node formed at a junction of the pull-up circuit and the pull-down circuit;
a pass transistor coupled between the data node and a data pad; and
a driving circuit structured to drive the pass transistor;
wherein the pass transistor is operative when the circuit is in a data input mode and in
a data output mode.

10 9. The circuit of claim 8 wherein the pull-up circuit comprises first and second
serially coupled transistors.

10 10. The circuit of claim 9 wherein the first transistor is structured to be driven by a
15 transistor driving circuit coupled to the data input terminal.

11. The circuit of claim 10 wherein the second transistor is structured to be driven
by a static voltage.

20 12. The circuit of claim 11 wherein the data input terminal is coupled to a circuit
core, and wherein the static voltage is a power supply voltage of the circuit core.

13. The device of claim 8 wherein the driving circuit comprises:
a first voltage input to receive a first power supply voltage;
25 a second voltage input to receive a second power supply voltage, the second power
supply voltage higher than the first power supply voltage;
an input terminal structured to receive a voltage level signal from the data pad;
a voltage sensor coupled to the input terminal and structured to generate a control
signal based on the voltage level of the data pad;
30 a control circuit coupled to the voltage sensor and structured to generate an output
signal responsive to the control signal.

14. The device of claim 13 wherein the control circuit is coupled to the first
voltage input and to the second voltage input, the control circuit structured to generate the

output signal from the first power supply voltage or from the second power supply voltage, responsive to the control signal.

15. The device of claim 14 wherein, when the pad voltage is above a threshold
5 voltage, the control circuit generates the output signal from the first power supply voltage.

16. A device, comprising:
a data generator coupled to a data node;
a pass transistor coupled between the data node and a data pad, the data pad structured
10 to be coupled to by an external device;
a driving circuit coupled to the data pad and structured to drive the pass transistor
based on a signal sensed at the data pad.

17. The device of claim 16 wherein the driving circuit is structured to drive the
15 pass transistor in both data input and data output modes.

18. The device of claim 16 wherein the signal sensed at the data pad is a voltage
level signal.

19. The device of claim 18 wherein the driving circuit comprises:
a first power supply voltage terminal;
a second power supply voltage terminal;
a threshold level detector coupled to the data pad; and
a drive signal generator coupled to the first power supply voltage terminal and to the
25 second power supply voltage terminal and structured to generate a drive signal based on an
output of the threshold level detector.

20. A method, comprising:
sensing a voltage at a data pad;
30 when the sensed voltage is below a threshold value, driving a pass transistor coupled
to the data pad with a first driving signal; and
when the sensed voltage is above the threshold value, driving the pass transistor with
a second driving signal.

21. The method of claim 20 wherein driving a pass transistor with a first driving signal comprises driving a pass transistor with a static voltage having a first value.

22. The method of claim 21 wherein driving a pass transistor with a second driving signal comprises driving a pass transistor with a static voltage having a second voltage value, the second voltage value less than the first voltage value.

23. The method of claim 22 wherein the second voltage value is a value between a power supply voltage of a device that generated a data signal at the data pad and a power supply voltage of a device that is using the data signal from the data pad.

24. The method of claim 20 further comprising, before sensing a voltage at a data pad, driving a data signal to the data pad.

25. A method, comprising:
generating data at a data node;
driving at a first time, with a driving circuit, a pass transistor coupled between the data node and a data pad to transfer the generated data from the data node to the data pad; and
at another time, with the same driving circuit, driving the pass transistor to transfer data from the data pad to the data node.

26. The method of claim 25 wherein driving a pass transistor comprises:
sensing a voltage level at the data pad; and
driving the pass transistor with a signal based on the sensed voltage level.

27. The method of claim 25 wherein,
when the data pad has a voltage level less than a threshold voltage, driving the pass transistor with a first voltage; and
when the data pad has a voltage level greater than or equal to the threshold voltage, driving the pass transistor with a second voltage.

28. The method of claim 27 wherein the first voltage is greater than the second voltage.